

Journal of Catalysis

EDITORS:

W. Keith Hall

Frank S. Stone

ASSOCIATE EDITOR:

Robert L. Burwell, Jr.

EDITORIAL BOARD:

R. B. Anderson

J. B. Butt

A. Cimino

R. P. Eischens

P. C. Gravelle

G. L. Haller

J. W. Hightower

H. Knözinger

M. Kraus

A. Nielsen

G. Pez

J. Rabo

W. M. H. Sachtler

J. J. F. Scholten

A. W. Sleight

K. Tamaru

S. J. Thomson

P. B. Wells

J. T. Yates

Volume 98 • 1986



ACADEMIC PRESS, INC.

Harcourt Brace Jovanovich, Publishers

San Diego Orlando New York Austin London
Montreal Sydney Tokyo Toronto

Copyright © 1986 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated, per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for creating new collective works, or for resale. Copy fees for pre-1986 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0021-9517/86 \$3.00

MADE IN THE UNITED STATES OF AMERICA

Contents of Volume 98

Number 1, March 1986

DUNCAN SEDDON. Selectivity for <i>para</i> -Xylene in the Isomerization of Xylenes Catalyzed by Zeolites with Ten-Ring Windows	1
NUTAN K. PANDE AND ALEXIS T. BELL. Influence of Support Composition on the Reduction of Nitric Oxide over Rhodium Catalysts	7
SUZANNE HARRIS AND R. R. CHIANELLI. Catalysis by Transition Metal Sulfides: A Theoretical and Experimental Study of the Relation between the Synergic Systems and the Binary Transition Metal Sulfides.	17
N-S. CHIU, S. H. BAUER, AND M. F. L. JOHNSON. Co/Mo/Al ₂ O ₃ Catalyst Structure Determination by EXAFS. II. Mo K-Edge of the Sulfided State	32
MARVIN F. L. JOHNSON, ANDREW P. VOSS, S. H. BAUER, AND N-S. CHIU. Co/Mo/Alumina Catalyst Structure Determination by EXAFS. III. The Catalysts: Their Preparation, Characterization, and HDS Activities.	51
G. MARCELIN, R. F. VOGEL, AND H. E. SWIFT. The Gas-Phase Hydrogenation of Benzene Using Phosphate-Supported Nickel Catalysts	64
B. N. SHELMOV, I. V. ELEV, AND V. B. KAZANSKY. Use of Photoreduction for Activation of Silica-Molybdena Catalysts for Propylene Metathesis: Comparison with Thermal Reduction	70
E. ALSDORF, W. HANKE, K.-H. SCHNABEL, AND E. SCHREIER. Infrared Studies on the Interaction of Ammonia and Water on MoO ₃ /SiO ₂ Catalysts	82
NOBUO TAKAHASHI, MINORU TAKIZAWA, AND YOSHIO SATO. Reaction of Propanaldehyde over Rh-Y Zeolite	88
NAOKO KOSAKA, YOSHIO SAKAI, AND NOBUO TSUDA. Metal-Insulator Transition and a Selectivity of a Catalytic Reaction: Propylene over Na _x WO ₃	95
RAMZI Y. SALEH, ISRAEL E. WACHS, SHIRLEY S. CHAN, AND CLAUDIO C. CHERSICH. The Interaction of V ₂ O ₅ with TiO ₂ (Anatase): Catalyst Evolution with Calcination Temperature and <i>O</i> -Xylene Oxidation	102
TERRY J. MAZANEC. On the Mechanism of Higher Alcohol Formation over Metal Oxide Catalysts. I. A Rationale for Branching in the Synthesis of Higher Alcohols from Syngas	115
KWANG OH KOH, HAKZE CHON, AND MU SHIK JHON. Site Selectivity of Alkaline Earth Metal Cations in Zeolite A	126
F. NOTHEISZ, Á. MOLNÁR, Á. G. ZSIGMOND, AND M. BARTÓK. The Mechanism of Hydrogenolysis and Isomerization of Oxacycloalkanes on Metals. IV. Mechanism of Transformation of Oxiranes on Cu Catalyst.	131
S. LARS T. ANDERSSON. Reaction Networks in the Catalytic Vapor-Phase Oxidation of Toluene and Xylenes.	138
RONALD E. HENDERSHOT AND ROBERT S. HANSEN. Reduction of Nitric Oxide with Carbon Monoxide on the Rh(100) Single-Crystal Surface	150
ANDRÁS ERDŐHELYI, MONIKA PÁSZTOR, AND FRIGYES SOLYMOSI. Catalytic Hydrogenation of CO ₂ over Supported Palladium.	166
SE H. OH AND JOYCE E. CARPENTER. Platinum-Rhodium Synergism in Three-Way Automotive Catalysts.	178
A. G. SHASTRI AND J. SCHWANK. The Influence of Hydrazine Reduction on Metal Dispersion and Support Morphology in Bimetallic Ru-Au/MgO Catalysts	191
ARNE ANDERSSON, JAN-OLOV BOVIN, AND PAUL WALTER. Ammoxidation of 3-Picoline: An Activity and High-Resolution Electron Microscopic Investigation of Vanadium Oxide Catalysts.	204

TAIHEI NITADORI, SHIGEO KURIHARA, AND MAKOTO MISONO. Catalytic Properties of $\text{La}_{1-x}\text{A}'_x\text{MnO}_3$ ($\text{A}' = \text{Sr, Ce, Hf}$)	221
---	-----

NOTE

L. BLANCHARD, J. GRIMBLOT, AND J. P. BONNELLE. X-Ray Photoelectron Spectroscopy Studies on Nickel-Tungsten Mixed Sulfide Catalysts	229
--	-----

Number 2, April 1986

R. J. RENNARD AND J. FREEL. The Role of Sulfur in Deactivation of $\text{Pt/MgAl}_2\text{O}_4$ for Propane Dehydrogenation	235
J. G. HIGHFIELD AND J. B. MOFFAT. Characterization of Sorbed Intermediates and Implications for the Mechanism of Chain Growth in the Conversion of Methanol and Ethanol to Hydrocarbons over 12-Tungstophosphoric Acid Using Infrared Photoacoustic Spectroscopy	245
M. V. LANDAU, L. I. NIKULINA, B. K. NEFEDOV, A. S. GOLUB, YU. N. NOVIKOV, AND M. E. VOL'PIN. MoS_2 Promotion with Nickel in Organic Solvents: Hydrogenation of Aromatics	259
J. E. SUEIRAS, N. HOMS, P. RAMIREZ DE LA PISCINA, M. GRACIA, AND J. L. G. FIERRO. Structure and Reactivity of Alumina-Supported Iron Catalysts for Ammonia Synthesis	264
M. ASSCHER, J. CARRAZZA, M. M. KHAN, K. B. LEWIS, AND G. A. SOMORJAI. The Ammonia Synthesis over Rhenium Single-Crystal Catalysts: Kinetics, Structure Sensitivity, and Effect of Potassium and Oxygen	277
A. ALBA, M. A. ARAMENDÍA, V. BORAU, C. JIMÉNEZ, AND J. M. MARINAS. Influence of Preparation Variables on the Activity and Selectivity of Pd/AlPO_4 Catalysts	288
L. VORDONIS, P. G. KOUTSOUKOS, AND A. LYCOURGHOTIS. Development of Carriers with Controlled Concentration of Charged Surface Groups in Aqueous Solutions. I. Modification of $\gamma\text{-Al}_2\text{O}_3$ with Various Amounts of Sodium Ions	296
P. S. KIRLIN, B. R. STROHMEIER, AND B. C. GATES. The Effect of Carbon on the Reducibility of Rhenium in $\text{Pt-Re/Al}_2\text{O}_3$ Catalysts	308
F. GARBASSI, J. C. J. BART, R. TASSINARI, G. VLAIC, AND P. LAGARDE. Catalytic <i>n</i> -Butane Oxidation Activity and Physicochemical Characterization of Vanadium-Phosphorus Oxides with Variable P/V Ratio	317
H. COLLETTE, S. MAROIE, J. RIGA, J. J. VERBIST, Z. GABELICA, J. B. NAGY, AND E. G. DEROUANE. Supported Uranium Oxides as Oxidation Catalysts. I. Synthesis and Characterization of Uranium Oxides on Al_2O_3 , SiO_2 , TiO_2 , and MgO Supports	326
HUNG-CHEUN CHEUNG AND ABRAHAM CLEARFIELD. The Oxidative Dehydrogenation of Cyclohexene Catalyzed by $\text{ZrCu}(\text{PO}_4)_2$	335
KENNETH H. BABB AND MARK G. WHITE. Polynuclear Metal Complexes as Model Mixed Oxide Catalysts	343
ANNIE AMARIGLIO, ABDELMOULA ELBIACHE, AND HENRI AMARIGLIO. Effect of Oxidizing Pretreatments on the Behavior of a Rhodium Powder in CO_2 Chemisorption and Methanation	355
P. LEDOUX, Y. S. HSIA, AND S. KOVENKLIOGLU. Transient Study of Cyclohexane Dehydrogenation on $\text{Pt-Al}_2\text{O}_3$ Catalyst in a Constant Flow Stirred Tank Reactor (CSTR)	367

MICHAEL A. PACHECO AND EUGENE E. PETERSEN. A Novel Interpretation of Temperature versus Time Curves for Deactivating Catalyst Systems.....	380
Á. MOLNÁR, I. BUCSI, M. BARTÓK, F. NOTHEISZ, AND G. V. SMITH. Reactions of Organosilicon Compounds on Metals. III. Selective Poisoning by Et_3SiH of Catalytic Hydrogenation and Dehydrogenation	386
P. H. DESAI AND J. T. RICHARDSON. Crystallite Size Effects in Nickel Catalysts: Cyclohexane Dehydrogenation and Hydrogenolysis	392
MAMORU AI. Oxidative Dehydrogenation of Isobutyric Acid on $\text{V}_2\text{O}_5\text{--P}_2\text{O}_5$ Catalysts	401
TIMOTHY R. FELTHOUSE AND JUDITH A. MURPHY. Zeolite-Encapsulated Platinum Catalysts: Preparation, Characterization by Transmission Electron Microscopy, and Their Shape Selective Behavior toward Various Nitrogen Base Poisons during the Catalytic Oxidation of Aqueous Formaldehyde.....	411
M. T. ARONSON, R. J. GORTE, AND W. E. FARNETH. The Influence of Oxonium Ion and Carbenium Ion Stabilities on the Alcohol/H-ZSM-5 Interaction	434
WALTER E. RUDZINSKI, TYRA L. MONTGOMERY, JAMES S. FRYE, BRUCE L. HAWKINS, AND GARY E. MACIEL. Surface Characterization of Systems with Diphenylphosphinoethylsilane Immobilized on Silica Gel	444
JAMES T. RICHARDSON AND JAMES L. PROPP. Pore Size Effects on Sintering of $\text{Ni}/\text{Al}_2\text{O}_3$ Catalysts	457
XUEZHI ZHANG AND PAUL BILOEN. A Transient Kinetic Observation of Chain Growth in the Fischer-Tropsch Synthesis	468
ROBERT J. DAVIS, JOSEPH A. ROSSIN, AND MARK E. DAVIS. Hydroformylation by Rhodium Zeolite A Catalysts	477
MICHAEL J. WAX, RICHARD D. KELLEY, AND THEODORE E. MADEY. Ethane Hydrogenolysis Catalyzed by $\text{W}(100)$	487
TOMOYUKI INUI, HIROKAZU MATSUDA, OSAMU YAMASE, HIDEO NAGATA, KOICHI FUKUDA, TAKAYO UKAWA, AND AKIRA MIYAMOTO. Highly Selective Synthesis of Light Olefins from Methanol on a Novel Fe-Silicate	491
G. V. SMITH, Á. MOLNÁR, M. M. KHAN, D. OSTGARD, AND N. YOSHIDA. Characterization of Palladium Surfaces with (+)-Apopinene: Correlation of Reaction Paths with Surface Features.....	502
G. MEITZNER, W. J. MYKYTKA, AND J. H. SINFELT. Metal-Catalyzed Reactions of Methylamine in the Presence of Hydrogen	513
G. VAN DER LEE, B. SCHULLER, H. POST, T. L. F. FAVRE, AND V. PONEC. On the Selectivity of Rh Catalysts in the Formation of Oxygenates.....	522
R. A. VAN SANTEN AND C. P. M. DE GROOT. The Mechanism of Ethylene Epoxidation.....	530
SAVVAS SEIMANIDES AND MICHAEL STOUKIDES. Catalytic Oxidation of Methane on Polycrystalline Palladium Supported on Stabilized Zirconia	540

NOTES

A. SÁRKÁNY, A. H. WEISS, AND L. GUCZI. Structure Sensitivity of Acetylene-Ethylene Hydrogenation over Pd Catalysts	550
G. M. NUÑEZ, A. R. PATRIGNANI, AND A. J. ROUCO. Rh/SiO_2 and $\text{Rh}/\text{Al}_2\text{O}_3$ Catalysts: Effect of Precursor and H_2 Pretreatment on Chemisorption and Catalytic Activity	554
J. T. RICHARDSON AND R. KOVEAL. Influence of Crystallite Size on Carbon Monoxide Methanation	559

G. APAL, J. R. MONNIER, AND D. R. PREUSS. Low-Temperature Formation of Cu^+ in Evaporated Cu–Cr Oxide Films: Application to Methanol Synthesis	563
YOSHIO TAKASU, MASAKI MATSUI, AND YOSHIHARU MATSUDA. Absorption and Desorption Behavior of Unstable Lattice Oxygen in Praseodymium Oxide.....	568
DILIP G. KALTHOD AND SOL W. WELLER. Studies of Molybdenum Sulfide Catalysts: Effects of Pretreatment on Olefin Hydrogenation Activity.....	572
R. A. DEMMIN AND R. J. GORTE. The Effect of Niobia on the Methanation Activity of a Pt Foil.....	577
AUTHOR INDEX FOR VOLUME 98.....	581

The Subject Index for Volume 98 will appear in the December 1986 issue as part of a cumulative index for the year 1986.